Q. Please provide a detailed quantitative and qualitative analysis of the reliability of supply on 1) Hydro's Interconnected System, and 2) the Avalon Peninsula, comparing the situation in 2022, post Muskrat Falls with Holyrood TGS retired, to the situation in 2022, post Muskrat Falls with Holyrood TGS in service and available for base load operation if needed. Specifically, will the reliability of supply be improved following commissioning of Muskrat Falls if Holyrood remains operational, and if so, by how much?

A. From a quantitative point-of-view, following commissioning of Muskrat Falls and associated transmission projects, the reliability of supply would be slightly improved with Holyrood TGS in service and available for base load operation if needed, compared to the same scenario, with the Holyrood TGS retired. As shown in Table 1, in 2020-21, the LOLH pre-Holyrood TGS retirement is calculated to be 0.18 hours per year. Post-Muskrat Falls completion, in 2021-22, with the Holyrood TGS retired, the LOLH is 0.19 hours per year. The slight difference in LOLH value indicates the improvement in reliability due to the additional reserve provided by the Holyrood TGS is minimal.

Qualitatively, keeping everything else constant, it is to be expected that keeping a large generation source in service, rather than retiring it, would lead to some slight reliability improvement.

Please also refer to Hydro's response to CA-NLH-081 for Hydro's approach to the reliability of supply of the Island Interconnected System as opposed to the Avalon Peninsula.

Table 1 is from the response to CA-NLH-022 (Revision 1, Dec 18 -14), *2013 NLH General Rate Application*.

Table 1

Island Connected System
Load Forecast and Capacity and Energy Balances
With Proposed Additions

	Load Forecast		Existing and Proposed System				
			Net[1,2,3,4]	Firm[1,5,6]		Energy[5]	Interruptible
	Peak	Energy	Capacity	Capability	LOLH	Balance	Contracts
Year	MW	GWh	MW	GWh	hrs/yr	GWh	MW
2015	1,721	8,745	1978	8,940	0.73	195	75.8
2016	1,736	8,902	1978	8,940	0.99	38	75.8
2017	1,755	8,921	1978	8,940	1.02	19	75.8
2018	1,757	8,914	2953	12,791	0.15	3,877	75.8
2019	1,760	8,949	2953	13,024	0.16	4,075	N/A
2020	1,766	9,016	2953	13,024	0.16	4,008	N/A
2021	1,781	9,113	2953	10,028	0.18	915	N/A
2022	1,801	9,243	2487	10,028	0.19	785	N/A
2023	1,824	9,325	2479	10,067	0.20	742	N/A
2024	1,841	9,429	2479	10,202	0.21	773	N/A
2025	1,861	9,522	2479	10,202	0.22	680	N/A
2026	1,879	9,595	2429	10,202	0.23	607	N/A
2027	1,894	9,692	2429	10,202	0.24	510	N/A
2028	1,912	9,783	2429	10,035	0.25	252	N/A
2029	1,929	9,848	2379	10,035	0.27	187	N/A
2030	1,942	9,930	2379	10,035	0.29	105	N/A
2031	1,958	10,012	2379	10,035	0.30	23	N/A

[1]. Assumes Muskrat Falls, Labrador-Island Link and Maritime Island Link in-service in 2018.

Assumes that Holyrood shuts down in 2021.

Assumes that CBPP Co-Generation NUG contract is not renewed in 2023.

Assumes that Hardwoods CT shuts down in 2025.

Assumes that Stephenville CT shuts down in 2028.

2. Assumes capacity is available through market or other contractual means to enable full use of the available transmission capacity.
3. Assumes capacity at winter peak of 121 MW for NP and 113 MW for Deer Lake Power.
4. Assumes capacity at winter peak of 18 MW for Star Lake, 8 MW for Corner Brook Co-gen and 63 MW for Nalcor Grand Falls and Bishop's Falls. Rattle Brook, Nalcor Buchans, St. Lawrence Wind and Fermeuse Wind are assumed to have 0 MW capacity at winter peak.
5. Firm Energy Capability does not include energy capability of installed combustion turbines. It does include firm off-island energy sources, including Muskrat Falls and 1,000 GWh from the Churchill Falls recall block surplus to Labrador requirements.
6. Firm capability for the hydroelectric resources is the energy capability of those resources under the most adverse sequence of reservoir inflows occurring within the historical record. Firm capability for the thermal resources (HTGS) is based on energy capability adjusted for maintenance and forced outages.